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**SINCUS NEWS**

1229 Rhodes Rd.  
Johnson City, New York 13790  
(607)798-7219

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Since 1982

Happy-H A P P Y-Happy

Here's wishing one and all- a Very Happy Thanksgiving Day, and Happy Holidays this December and Happy New Year 1988 Enjoy, be merry, be thankful and then write an article for your newsletter ! from your editor.

**H A P P Y F I V E Y E A R S O L D**

FIVE years old this November! A few charter members may well remember the early meets- they were frequent- as many as three a month, and well attended! I remember that most of the time in the early months was spent writing a charter, figuring out how to run the meets, advertise, get a room and pay for it all!! The least problem was subject matter- everything was of interest and so many volunteered to give talks on so many varied areas. Practical problems, such as tape loads and basic programming, RAMTOPS and something called machine code, were just a few of the early subjects. We were all five years younger, many new to computers and trying to get a handle on the darn thing. We sure were grateful to the few computer professionals in the area who had the sense to get into Sinclair computers. They made a big impact on our ability to get into the machines and make the most of them.

Personally I didn't think the TS computer community would hold together this long. I wrote an unanswered letter to Uncle (Sir) Clive to the effect, "come back to the US market, you have a great product, we'll buy it, just support it." Well, he didn't, in fact the whole market just sorta dribbled away. Look for a computer shop nowadays, clones for ibm, apple and a few old Ataris and Commodores, and Tandy clones. New products for the TS line still come out almost monthly. Fewer and fewer retailers hawk the remaining wares. The QL is being dumped on the market, hardware is getting cheaper, software still holding high prices.

Something new always excites our interest, something old just doesnt quite cut it. Reading about the ZX81/TS1000/1500 doesnt really do it for me. But my eleven year old finds it neat, but having used the Apple IIs in school, erratic tape loads, SLOW tape loads just dont do it. SO when Wes B. brings up his bank switching hardware and the possibility of RAM, lots and lots of RAM, of instant loads, a whole new world opens up for the TS2068. Those interested in this as a group project, start thinking about it, like start dreaming of 640K RAM just for a start. The possibility of making this a group project will be discussed at the November meeting, the hardware problems, power supply and buffering and costs, then too the major rewriting of the operating ROM for bank switching and the making of EEPROMS. I don't want to discourage anyone, nor do I wish to make it sound as easy as a printer interface.

Our September meet, as well as the October meet were short and sweet, with Wes talking about his bank switching project. He has been working on the prototype for several months now and maybe able to help the rest of us decide whether or not to get into bankswitching. Dan Lamen

brought his TS1000 hi res program in for a demo in October, have to bring it back again Don.

Many are finding inexpensive but very good 3" disc drives- diskettes about \$4 each which hold 360K - from Amdek - write or call Peripherals Direct, PO Box 4301, Northbrook IL 60065 (800 - 332-9988; \$45 single order, cheaper in quantity. Limited quantity. Several have had good luck using the LARKIN IF system with it. LARKEN Electronics, R.R. #2, Navan, Ontario Canada K4B 1H9 for info on the IF.

TS REPAIRS-from the Detroit Area TS News-a message on Compuserve listed the following: TS2068 repairs-\$15 plus parts, Promised Land Electronics, Dan Elliott, Rt 1, Box 117, Cabool MO 65689 (314) 739-1712 5pm - 9pm and (417) 496-4571 weekends. Anyone using this service, let us know your opinion of it, and we'll share with everyone.

SINCLAIR's Z88-in the Sep/Oct 87 issue of Time Designs Magazine (TDM), hands on reports are coming in. The resident software, display, the machine itself are very good. But... the lack of a data storage system other than the 128K RAM cartridge, BBC BASIC as opposed to Sinclair's BASIC or superBASIC, no internal modem, and recent price jump to 399 (pounds) present the buyer with a bag of problems right off the bat. Mark Steuber of Sharp's and Rob Curry of Curry Computers got to do the test drive. (TDM, 29722 Hult Road, Colton OR 97017; \$16.95 a year for subscription)

Hello and thanks to renewing members; Curtis and Mel Murray, Binghamton, NY; Dan Dodway, Port Crane, NY; Hal Sohn, Vestal, NY; Clyde Tackley, Johnson City, NY; and Jerry Knickerbocker, Binghamton, NY; Don Waltermann, Sterling Hts, MI and Hello and welcome to new member Ike Walker, Charleston, WV.

Tape swap report: John Colonna reports a brisk business in our first two tape swap exchanges. Tape number three is well under way, and hopefully by the next newsletter it will be ready. Joan Kealy has sent us MORE of her original programs, and peeking at one kept me busy one whole evening. "Guizmstr" has to be one of the neatest ways to learn a subject.

Below is a list of our swaps, monthly, bi-monthly and when ever, these people help keep us up on what goes on around the US and Canada. I notice the end of summer drought on articles, lists of user groups and lots of cartoons and RLE pics in many of the current issues. Personally I am grateful to all who have supported SINCUS NEWS so well over the past five years, I can not do it alone, so I appreciate any and all help.

Newsletter-           GROUP,                   contact,                   address

SINC-LINK; TORONTO TSUG, POB 7274, STATION A TORONTO, ONTARIO, M5W 1X9  
CANADA:bi-monthly

LISTing; LONG ISLAND STUG, POB 438, CENTERPORT, NY 11721:bi-monthly

THE PLOTTER; CLACKAMUS COUNTY AREA TSUG, 1419 1/2 7TH STREET OREGON  
CITY, OR 97045; \$15/yr, monthly

SLUG Newsletter; SINCLAIR LOUISVILLE UG, 4122 WALLINGFORD LN.  
LOUISVILLE, KY 40218-2365: monthly

ZX-APPEAL; VANCOUVER SINCLAIR UG, R.L. HUMPHREYS, 2006 HIGHVIEW PL.,  
PORT MOODY, BC V3H 1N5 CANADA: \$15/yr, monthly

CATS NEWSLETTER; CAPITAL AREA TSUG, POB 467, FAIRFAX STATION, VA  
22039: \$18/yr, monthly

THE RAMTOP; GREATER CLEVELAND SINCLAIR UG, James Dupuy, 6514 Bradley  
Ave (Down), Parma, Ohio 44129: \$15/yr, monthly

TSUG-MILE HIGH CHAPTER, F. Holland, 1423 S. Pearl St. Denver, CO  
80210:monthly

SMUG BYTES; SINCLAIR MILWAUKEE UG, Bill Heberlein, POB 101, BUTLER, WI  
53007: \$10/yr, monthly

TIMELINEZ; SAN FRANCISCO BAY AREA UGs, (Peninsula UG; East Bay Z80 UG;  
Silicon Valley Sinclair Technology), Rita Carr, 6675 Clifford Drive,  
Cupertino CA 95014-4530: \$10/yr, monthly

DALLAS T/S/Amstrad UG Newsletter; George E. Edmonds, POB 153421,  
Irving, Texas 75015: monthly

INDIANA STUG Newsletter, 513 E. Main Street, Peru, IN 46970: monthly

DETROIT AREA TS NEWS; T/S SIG of the Southeastern Michigan Computer  
Organization; Barry Carter, POB 614, Warren MI 48090: \$10/yr, monthly

Timex Sinclair Bulletins, Ottawa-Hull TSUG, Bill Harmer, 97 Ruskin St.  
Ottawa, Ontario K1Y 4B3 Canada

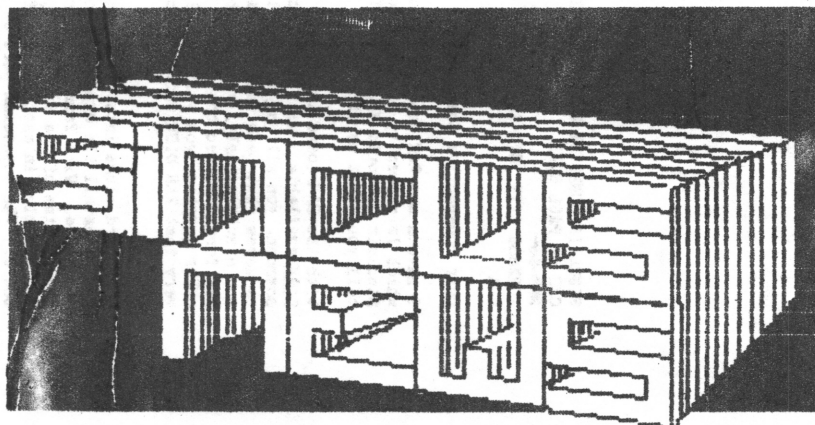
NITE-TIMES NEWS; Chicago Area Timex UG, 1885-A Yorktown Avenue Great  
Lakes, Illinois 60088: \$10/yr, monthly

The SINC TIMES, NORTH EAST FLORIDA TSUG, 1707 King St., Jacksonville,  
FL 32204:quarterly

QZX Journal; 2025 D'Donnell Dr., Las Cruces, NM 88001: \$12/yr,  
monthly

TS-SAFE Disk Up-Date, 1317 Stratford Ave., Panama City, FL  
32404:quarterly, \$12/yr

SEASONS GREETINGS FROM  
\*AIT of us\*



Matthew Zenker  
PO Box 12534  
Rochester, NY 14612-0534  
USA  
716-663-2048 after 6pm  
eastern time  
October 8, 1987

SINCLAIR COMPUTER USERS SOCIETY  
C/O ER PAUL HILL  
P88-66-  
JOHNSON CITY, NY 13790  
USA

Dear Prospective Customer:

I have a new RAM expansion board available for the Sinclair QL computer which is presently being advertised in Computer Shopper Magazine and Sinclair QL World Magazine. I would like to take this opportunity to tell you about my expansion.

With the RAM board installed, you will have a total RAM memory area of 544K available. With multitasking software that is available from other sources, you will be able to load and run all four of the software packages that were included with the computer. While the programs do not run simultaneously, you are able to keep them resident and switch back and forth between them. With RAM disk software, also available from other sources, you will be able to configure the RAM expansion into a very fast RAM DISK which is about one-hundred times faster than a floppy disk.

The board plugs into the expansion port and is small enough so that you can reinstall the expansion port cover if you are not using another interface. With four-layer printed circuit technology, I bring every single line of the expansion port to the other side of my board so that you can plug in another interface and run it simultaneously with my RAM board. The expansion port on my board is the same electrically as that within the QL itself. Some of the other RAM expansions, like the one made by Miracle Systems, do not do this. The result is that some of the available disk interfaces will not work with their board. My board will work with any available disk interface with the exception of three and with those three, it will not work only because the memory on them will occupy the Q1 space as it does on my board. These three are the SANDY 256K SUPER Q BOARD, SANDY 512K SUPER Q BOARD, and MIRACLE SYSTEMS TRUMP CARD. (I do not sell any of these interfaces.) However, it will work with the unexpanded SANDY SUPER Q BOARD which has no additional memory on it. The result will be something like the TRUMP CARD except, the total available RAM area will be 640K.

I believe I have done what I have set out to do and that is, design the best available RAM expansion for the Sinclair QL computer. The only board on the market that even comes close to performing as well as mine does is the RAM board made by CST. Their advertisement in "Sinclair QL World Magazine" boast that their board is the only board available that operates with the high performance of "zero-wait state operation". Not any more. QL owners in general have also experienced the unpleasant fact that most interfaces draw large amounts of power causing excessive heating and power surge problems, especially when used in conjunction with disk interfaces. Special circuitry on my board enables me to shut off all unused circuits when not needed, unlike the circuits on other boards which remain active, thusly reducing the overall amount of current consumed by the board. Also, I am including in the circuitry a special kind of surge suppression device which because of its response time will eliminate any power line noise from within the entire QL power system. The cover I am supplying for other interfaces is black-anodized aluminum, unlike the painted and plastic covers offered by other manufacturers.

I am so confident in the reliability and the fact that you will like this board that I am offering a guarantee and a warranty with the unit.

**Guarantee:** If for any reason other than outlined below, you are not satisfied with your 2512K RAM expansion board within thirty days after you receive it, return it postage paid to me for a full refund.

**Warranty:** If your unit should fail for any reason other than outlined below due to defects in materials and workmanship during the first five-years of ownership, return it to me postage paid. I include funds sufficient for the return postage; I will repair and return your unit in a timely manner.

The guarantee or warranty will not cover problems arising from owner misuse, abuse, or problems arising from use of the board with Sinclair QL computers that have been modified to operate at clock speeds greater than the normal 7.5 MHz.

If you were to order the CST 512K RAM expansion you would have to pay \$236.00 for it as compared with my price of \$130.00 plus \$5.00 shipping and handling.

Should you choose to order my unit for your QL, send check or money order for \$135.00 made payable to Matthew Zenker; or, include your VISA/MC card number, expiration date, and signature to the address given at the top of this letter. Thank you.

Sincerely,

*Matthew Zenker*

Matthew Zenker

September 30, 1987

Dear Paul

Thank you for your kind letter and interest. Your newsletters are very interesting. You have a colossal experience and a power. The computer networks are not in Poland. We have no modems, no floppy disk drives and no own printer. We have only a theoretical knowledge and a big enthusiasm.

I would like to tell you a little about myself. I am 32. I have the wife and two wonderful daughters 4 and 7. My wife is a school-master in the high economic school. I am an electronics engineer in the computer service for one of the largest computer centers in Poland. Here we have two largest computers of ICL from United Kingdom. I am interested in 8 and 16 bit computers. I try with my friends to find the application of our 8 bit machines (two TIXEX 2048 and ATARI 800 XL with a data recorder) in the school and home. I lecture once a week in high school. I read regular the small systems journal BYTE from your country in our library.

Second my hobby is the sea yachting. I teach the young people of the seamanship such as the sea navigation, the theory of sailing, the piloting, the meteorology etc.

Outside the yachting season I spend my no long free times study a computer knowledge. At present I am learning the C programming. I like it. The C language permits to make the fantastic tools!

I and my friends try to raise the funds for IBM PC XT Compatible or ATARI ST. It is very difficult in the bad circumstances in Poland. The prices of a computer equipment are very large confrontation with our wages. The price of 8 bit computer is about the payment for 6 months of a work of a good engineer and the price of 16 bit computer (e.g. IBM PC XT Compatible from Taiwan or ATARI ST) is the wage of four years!!! (I must to work 8 hours for one 5.25" diskette.)

In the last issue I had included a letter from the above correspondent. I had mailed a newsletter and note to the effect that I doubted many TS users could afford to send a computer or money, but that I was including his letter in the newsletter. The response is above, a little surprising, first that Zbigniew's English is miles ahead of my Polish, and that he is into yachting! And his hope springs eternal.

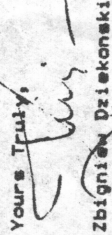
Considering, that all our wages we spend for no rich life, the purchase of the computer without the help from outside is impossible.

Perhaps you have a good idea how we can to earn a money for a computer equipment in your country. In the midst of my friends are the good computer programmers and the electronics specialists. We can to make the specialistic works for a small payment at somebody discretion. Maybe this way we will make the money for our ideal 16 bit computer.

We are jealous of you because you can to buy the good personal computer at the price that is your month's wage. It is fantastic! I and my friends will be glad to take up the co-operation with everybody who can to help us.

Your country is very far from Poland. The answer to the letter we receive two month later. It is very long time. Nevertheless I believe you will maintain the mail and maybe the co-operation in the microcomputer domain.

I send the greetings from Poland.

Yours Truly,  
  
Zbigniew Dziekonski

My address: Osiedle XX-lecia PRL 18 A/2  
82-200 MALBORK, POLAND

The copy of Currys ad is from the Daily Mirror, Oct 4, 1987.

A couple points that maybe blurred after several repro transfers;

There is NO address for the store- one either knows or rings 01-200-0200 anytime in Britain

The credit card in the lower right has an APR of 33.7%, if interested write: Currys BudgetCard from Currys Ltd. 46-50 Oxbridge Road, London, W5 2SU

Note the 4 year guarantee: with purchased insurance

Current exchange rates are about \$1.50 to the pound, making the Sinclair 128 + 3 about \$300(US)

Amstrad is giving a lot of extras with the 464- for about \$450(US) he is giving the computer, color monitor joystick, lightpen and user group freebies

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4 YEAR GUARANTEE FOR YOUR NEXT YEAR

On the next four pages, TS2068 ROM disassembly by Wes Brzozowski continues. This project started last year, appearing in the Nov/Dec 86 issue and continuing into 1988. At the conclusion of the disassembly a limited complete series - 50 - maximum will be sold at about cost to members only. Stay tuned...Thanks Wes, Merry Christmas and Happy New Year to You and your family!

```

0F46 010300 L0F46 LD BC,0003
0F49 11703C LD DE,0SPCC
0F4C 21443C LD HL,NSPPC
0F4F C07E BIT 7,(HL)
0F51 2801 JR 2,L0F54

0F53 09 ADD HL,BC

0F54 E0B8 L0F54 LDDR

0F56 FD360AFF L0F56 LD (IY+10),0FF
0F5A F0C0019E RES 3,(IY+1) ;FLAGS - K mode
0F5E F0C029E RES 3,(IY+2) ;TV_FLAG
0F62 C3320E JP 00E32 ;Go get another line

;Error messages
; Similar to Spectrum at 1391

0F65 B0 DEFB 000
0F66 4FCB DEFB "D", "K"+080
0F67 4E453854 DEFB "NEXT without FD", "R"+080
0F6C 20776974
0F70 686F7574
0F74 20444FB2
0F78 56617269 DEFB "Variable not found", "d"+080
0F7C 61626C65
0F80 20666F74
0F84 20666F75
0F88 4EE4
0F8A 53756273 DEFB "Subscript wron", "g"+080
0F8E 63726970
0F92 74207772
0F96 6F6EE7
0F99 4F757420 DEFB "Out of asor", "y"+080
0F9D 6F66206B
0FA1 65606F72
0FAS F9
0FA6 4F757420 DEFB "Out of scree", "n"+080
0FAA 6F662073
0FAE 63726565
0FB2 EE
0FB3 4E756B62 DEFB "Number too hi", "g"+080
0FB7 65722074
0FB8 6F6F2062
0FBF 69E7
0FC1 52455455 DEFB "RETURN without 60SU", "B"+080
0FC5 324E2077
0FC9 6974686F
0FCD 75742047
0FD1 4F5355C2
0FD5 456E6420 DEFB "End of fill", "e"+080
0FD9 6F662066
0FDB 696CE5
0FE0 53544F50 DEFB "STOP statemen", "t"+080
0FE4 20737461
0FEB 74656B65
0FEC 6EF4
0FEE 496E7661 DEFB "Invalid argumen", "t"+080
0FF2 6C696420
0FF6 61726775
0FFA 6B656EF4
0FFE 496E7465 DEFB "Integer out of rang", "e"+080
1002 67657220
1006 6F757420
100A 6F662072
100E 616C67E5
1012 4E6F6E73 DEFB "Nonsense in BAS1", "C"+080
1016 656E7365
101A 20696E20
101E 42415349
1022 C3
1023 42524544 DEFB "BREAK (ONT repeat", "s"+080
1027 4B202B20
102B 434F4E54
102F 20726570
1033 656174F3
1037 4F757420 DEFB "Out of fat", "a"+080
103B 6F662044
103F 4154C1

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1042 496E7661 DEFB "Invalid file nam", "e"+080
1046 6C696420
104A 66696C65
104E 2066616B
1052 E5
1053 4E6F2072 DEFB "No room for lin", "e"+080
1057 6F6F6B20
105B 666F7220
105F 6C696EE5
1063 53544F50 DEFB "STOP in INPU", "T"+080
1067 20696E20
106B 494E5055
106F B4
1070 464F5220 DEFB "FOR without NEX", "T"+080
1074 77697468
1078 6F757420
107C 4E4538B4
1080 496E7661 DEFB "Invalid I/O devic", "e"+080
1084 6C696420
1088 492F4F20
108C 64657669
1090 63E5
1092 496E7661 DEFB "Invalid colo", "r"+080
1096 6C696420
109A 636F6C6F
109E F2
109F 42524541 DEFB "BREAK into progra", "a"+080
10A3 4B20696E
10A7 746F2070
10AB 726F6772
10AF 61ED
10B1 52414D54 DEFB "RANTOP no goo", "d"+080
10B5 4F50206E
10B9 6F20676F
10BD 6FE4
10BF 53746174 DEFB "Statement los", "t"+080
10C3 656B656E
10C7 74206C6F
10CB 73F4
10CD 496E7661 DEFB "Invalid strea", "a"+080
10D1 6C696420
10D5 73747265
10D9 61ED
10DB 464E2077 DEFB "FN without DE", "F"+080
10DF 6974686F
10E3 75742044
10E7 45C6
10E9 50617261 DEFB "Parameter erro", "r"+080
10ED 6B657465
10F1 72206572
10F5 726FF2
10FB 54617065 DEFB "Tape loading erro", "r"+080
10FC 206C6F61
1100 64696E67
1104 20657272
1108 6FF2
110A 4B697373 DEFB "Missing LRO", "S"+080
110E 696E6720
1112 4C524F03
1116 2CA0
1118 7F203139 DEFB ", , " +080
111C 3B322053 DEFB "c 1982 Sinclair Research Ltd"
1120 696E636C
1124 61697220
1128 52657365
112C 61726368
1130 204C7464
1134 0D0D DEFB 00D,00D
1136 7F203139
113A 3B322054
113E 696B6570
1142 20436F6B
1146 70757465
114A 7220436F
114E 72F0

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;Error B : No room for line
; Identical to Spectrus at 1555

1150 JE10 L1150 LD A,010 ;Error number
1152 010000 LD BC,00000
1153 C3E0E JP 00EE3 ;Will eventually print error message

;Add a line to the BASIC program
; Identical to Spectrus at 1558

1158 ED43493C LD (E_PPC),BC ;Make new line to be the current line
115C 2A593C LD HL,(CH_ADD)

115F ED L115F EX DE,HL
1160 215011 LD HL,01150 ;Address of ERROR - B
1163 E5 PUSH HL ;Make it a RETURN address
1164 2A613C LD HL,(WORKSP)
1167 37 SCF
1168 ED52 SBC HL,DE ;length of line

116A E5 L116A PUSH HL

116B 60 L116B LD H,B
116C 69 LD L,C ;HL = line number
116D C0B616 CALL 01606 ;See if a line already has the number
1170 2006 JR NZ,L117B ;if not

1172 C02017 CALL 01720 ;Find the line
1175 C05017 CALL 01750 ;Wipe it out

117B C1 L117B POP BC
1179 79 LD A,C
117A 30 DEC A

117B 80 L117B OR B ;Length = 0, if it's only an ENTER
117C 2828 JR Z,L116A ;if length = 0

117E C5 L117E PUSH BC
117F 03 INC BC
1180 03 INC BC
1181 03 INC BC
1182 03 INC BC ;Add 4 bytes for length & line #
1183 2B DEC HL ;Point to byte before line #
1184 ED5B533C LD DE,(PROG)
1188 B5 PUSH DE
1189 C0B012 CALL 012B0 ;Open space for line
118C E1 POP HL
118D 22533C LD (PROG),HL

1190 C1 L1190 POP BC
1191 C5 PUSH BC ;BC=length

1192 13 L1192 INC DE
1193 2A613C LD HL,(WORKSP)
1194 2B DEC HL
1197 2B DEC HL
1198 E9B0 LDDR ;Copy the line
119A 2A493C LD HL,(E_PPC) ;Line number
1199 EB EX DE,HL
119E C1 POP BC ;Length
119F 70 LD (HL),B
11A0 2B DEC HL
11A1 71 LD (HL),C ;Enter the length of the line
11A2 2B DEC HL
11A3 73 LD (HL),E
11A4 2B DEC HL
11A5 72 LD (HL),D ;Enter line number to the line

11A6 F1 L11A6 POP AF
11A7 C32B0E JP 00E2B ;Back to the main loop

;Initial Channel Data
; Same form as Spectrus at 15AF

;Channel K - For the edit line

11AA 0005 DEFN 00500 ;Screen/printer output address
11AC 0E0C DEFN 00C0E ;Keyboard input address
11AE 4B DEFB "K" ;This is channel K

;Channel S - Main screen output

11AF 0005 DEFN 00500 ;Screen/printer output address
11B1 BF11 DEFN 011BF ;Causes error message - no screen input
11B3 53 DEFB "S" ;This is channel S

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;Channel R - RAN workspace

11B4 E70A DEFN 00AE7 ;Add character to Input or Edit works;
11B6 BF11 DEFN 011BF ;Causes error message - no RAN input
11B8 52 DEFB "R" ;This is channel R

;Channel P - Printer output

11B9 0005 DEFN 00500 ;Screen/printer output address
11BB BF11 DEFN 011BF ;Causes error message -no printer inp
11BD 50 DEFB "P" ;This is channel P

11BE 80 DEFB 000 ;Marks end of channels

;Error J - Invalid I/O device

11BF CF RST 8
11C0 12 DEFB 012

;Initial Stream data.
; Identical to Spectrus at 15C6

11C1 0100 DEFN 00001 ;Stream FD gets channel K
11C3 0600 DEFN 00006 ;Stream FE gets channel S
11C5 0B00 DEFN 0000B ;Stream FF gets channel R
11C7 0100 DEFN 00001 ;Stream 00 gets channel K
11C9 0100 DEFN 00001 ;Stream 01 gets channel K
11CB 0600 DEFN 00006 ;Stream 02 gets channel S
11CD 1000 DEFN 00010 ;Stream 03 gets channel P

;Preprocessor for current input routine. (Presently used only to
; read the keyboard
; Identical to Spectrus at 15D4

11CF F0CB026E L91CF BIT S,(IY+2) ;TVFLAG - to clear the edit line
11D3 2004 JR NZ,L91D9 ;if it's not necessary after a keypre

11D5 F0CB020E SET S,(IY+2) ;TVFLAG - Echo requested

11D9 CDE111 L91D9 CALL 011E1 ;Eventually does a CALL (HL)
11DC D8 RET C

11DD 2BFA JR Z,L91D9

11DF CF RST 8
11E0 07 DEFB 007 ;Error 8 - End of File

;Point to current channel input address
; Identical to Spectrus at 15E6

11E1 D9 EXI
11E2 E5 PUSH HL ;save registers
11E3 2A513C LD HL,(CURCHL) ;Address of current output address
11E6 23 INC HL
11E7 23 INC HL
11E8 1808 JR L91F2

##### ;Output character to current channel (Also has additions to input
; Similar to Spectrus at 15EF, but with considerable additions

;Enter here to first add 030 to character

11EA 1E30 LD E,030
11EC 83 ADD A,E

;Enter here to output character as is. RST 10 uses this

11ED D9 EXI
11EE E5 PUSH HL
11EF 2A513C LD HL,(CURCHL)

11F2 08 L91F2 EX AF,AF'
11F3 3ABF3C LD A,(CURCBN)
11F6 FE02 CP 002 ;Is bank # > 01?
11F8 300B JR NC,L9205

11FA 08 EX AF,AF'
11FB 5E LD E,(HL)
11FC 23 INC HL
11FD 56 LD D,(HL)
11FE EB EX DE,HL
11FF C06412 CALL 01264 ;A JP (HL). Effectively, a CALL (HL)
1202 E1 POP HL
1203 D9 EXI
1204 C9 RET

```



```

;Here for current channel bank = 2 or greater
1205 08 L9205 EX AF,AF' ;BUG!!! this is restored too early!!!
1206 2A519C LD HL,(CURCHL)
1207 46 LD B,(HL)
120A 0E88 LD C,888 ;All chunks except 3 & 7
120C 3ACASC LB A,(ANSFLG) ;destroys output character, due to bug
120F CD47 BIT 0,A ;0=input, 1=output, if no bug
1211 2002 JR NZ,L9215 ;if it's an output routine

1213 23 INC HL
1214 23 INC HL ;Shift to input address

1215 3AC85C L9215 LD A,(STREAM) ;Also destroys output character
1218 5F LD E,A
1219 1600 LD D,800
121B 05 PUSH DE ;Stream number is an input parameter
121C 110700 LD DE,80007
121F 19 ADD HL,DE
1220 E5 PUSH HL ;Address
1221 C5 PUSH BC ;Bank/Horiz Select
1222 010200 LB BC,80002
1225 C5 PUSH BC ;2 bytes of output parameters
1226 010000 LD BC,80000
1229 C5 PUSH BC ;No input paraas
122A C00045 CALL 865D0 ;CALL_BANK
122D E1 POP HL
122E 09 EXX
122F C9 RET

```

```

;Attach current channel to stream whose # is in A
; Similar to Spectra at 1601
1230 87 ADD A,A
1231 C616 ADD A,816
1233 6F LD L,A
1234 265C LD H,85C ;HL = addr of stream displacement
1236 5E LD E,(HL)
1237 23 INC HL
1238 56 LD D,(HL) ;DE = actual displacement
1239 7A LD A,D
123A 03 OR E
123B 2002 JR NZ,L923F ;If it's legal (not zero)

```

```

;Error if displacement is 0 (stream closed)
123D CF AST 0
123E 17 DEFB 817 ;Error 0 - Invalid stream
;If MSB is 1, then it was a SYSCON displacement for expansion bank
123F FE80 L923F CP 880
1241 3022 JR NC,L9265 ;For expansion bank

1243 1B BEC DE ;Displacement starts with 0
1244 2A4F5C LD HL,(CHANS)
1247 19 ADD HL,DE ;Address of channel output address

```

```

;Find out which channel & jump to proper flags handler?
; Similar to Spectra at 1615
1248 22515C LD (CURCHL),HL
1249 3E00 LD A,800
124D 32BF5C LD (CURCBW),A ;Current channel bank # gets 0, so as
; not to activate additional code in
; the output character routine
;In this case only, 00 points to home
; bank.
1250 FDCB30A6 RES 4,(IY+48) ;Not channel K
1254 23 INC HL
1255 23 INC HL
1256 23 INC HL
1257 23 INC HL
1258 4E LD C,(HL) ;Point to channel specifier (character)
;get it
1259 219312 LD HL,81293 ;Address of lookup table
125C C0A013 CALL 81368 ;Scan the table
125F D0 RET NC ;Return if no match
1260 1600 LD D,800
1262 5E LD E,(HL)
1263 19 ADD HL,DE ;Get address of flags adjuster
1264 E9 JP (HL) ;Adjust the flags (chan specific open)

```

```

;Addition to Attatch Current Channel routine, to open a channel
; to an expansion bank. Won't work because of bugs
; Has no comparable Spectrum routine
1265 2ABC5C L9265 LD HL,(SYSCON) ;HL points to SYSCON table
1268 0680 SUB 880 ;BUG!! Supposed to restore B register,
; but E has been ORed in. Makes garbage
126A 57 LD D,A
126B 19 ADD HL,DE
126C 22515C LD (CURCHL),HL ;In this case, CURCHL points to addr of
; bank number
126F 7E LD A,(HL)
1270 32BF5C LD (CURCBW),A
1273 FDCB30A6 RES 4,(IY+48) ;FLAG52 - Not channel K

```

```

;CURCHL is left pointing to a SYSCON 0i; not a channel. The "attach code" say
; want to insert a new channel & point CURCHL to it.
1277 23 INC HL
1278 23 INC HL
1279 23 INC HL
127A 23 INC HL
127B 23 INC HL
127C 23 INC HL

```

```

;Point to Attatch Current Channel code
; specific to this channel (SYSCON 07)
;CURCBW - A already has this
;Bank #
;Don't deselect RAM resident code!
127D 3ABF5C LD A,(CURCBW)
1280 47 LD B,A
1281 0E88 LD C,888
1283 56 LD D,(HL)
1284 23 INC HL
1285 5E LD E,(HL) ;DE = address
1286 62 LD H,D
1287 68 LD L,E ;Now it's in HL
1288 E5 PUSH HL ;Address
1289 C5 PUSH BC ;Bank #/Horiz select
128A 010000 LD BC,80000
128D C5 PUSH BC ;No output paraas
128E C5 PUSH BC ;No input paraas
128F C00045 CALL 865D0 ;CALL_BANK
1292 C9 RET

```

```

;Table of channel routine displacements for channel specific
; attach code.
; Identical to Spectra at 1620
1293 4806 DEFB "K",806 ;Channel K routine at 129A
1295 5312 DEFB "S",812 ;Channel S routine at 12A8
1297 5018 DEFB "P",818 ;Channel P routine at 12B3
1299 00 DEFB 800 ;Marks end of table

```

```

;Adjust flags for channel K = Current Channel
; Identical to Spectra at 1634
129A FDCB02C6 SET 0,(IY+2) ;TVFLAG - Lower screen
129E FDCB01AE RES 5,(IY+1) ;FLAG5 - Ready for key
12A2 FDCB30E6 SET 4,(IY+48) ;FLAG52 - channel K
12A6 1804 JR L92AC

```

```

;Adjust flags for channel S = Current Channel
; Identical to Spectra at 1642
12AB FDCB0286 RES 0,(IY+2) ;TVFLAG - Main screen
12AC FDCB01BE L92AC RES 1,(IY+1) ;FLAG5 - Send to screen, not printer
12B0 C38808 JP 80888 ;Use permanent colors & RETURN

```

```

;Adjust flags for channel P = Current Channel
; Identical to Spectra at 1640
12B3 FDCB01CE SET 1,(IY+1) ;FLAG5 - Send to printer, not screen
12B7 C9 RET
;Open up BC bytes at the location before HL
; Identical to Spectra at 1652
;Enter here to open one space
12B8 010100 LD BC,80001

```

```

;Enter here to open BC spaces
12B8 E5 PUSH HL
12BC C0B01F CALL 81FB8 ;Make sure there's room
12DF E1 POP HL
12C0 C0CA12 CALL 812CA ;Open the space
12C3 2A555C LD HL,(STKEND)
12C6 E9 EX DE,HL
12C7 E088 LDDR
12C9 C9 RET

```

```

;This routine actually modifies the system variables to reflect
; the recent space opened or closed up.
; Similar to Spectrus at 1664

12CA F3      PUSH AF
12CB E5      PUSH HL
12CC 21C45C  LD HL,ARSMUF
12CF 5E      LD E,(HL)
12D0 23      INC HL
12D1 56      LD D,(HL)
12D2 E3      EX (SP),HL
12D3 A7      AND A
12D4 ED52    SBC HL,DE
12D6 19      ADD HL,DE
12D7 E3      EX (SP),HL
12D8 3004     JR NC,L92E0

12DA EB      EI DE,HL
12DB 09      ADD HL,BC
12DC EB      EI DE,HL
12DD 72      LD (HL),D
12DE 2B      DEC HL
12DF 73      LD (HL),E

12E0 214B5C  L92E0 LD HL,VAR5 ;First of the Spectrus pointers
12E3 3E0E     LD A,90E ;How many pointers we may update

;Loop for all 90E, and change only those that need it
12E5 FE09    L92E5 CP #09 ;For NXLIN
12E7 2B04     JR Z,L92ED

12E9 FE08    CP #08 ;For DATADD
12EB 200B     JR NZ,L92FA

;Here when updating NXLIN or DATADD. We don't update them if
; there's an ARDS present
12ED E5      L92ED PUSH HL
12EE 21C65C  LD HL,ARSFLG ;ARSFLG
12F1 6E      LD L,(HL)
12F2 C87D    BIT 7,L
12F4 E1      POP HL
12F5 2B03     JR Z,L92FA ;if there's no ARDS present

12F7 23      INC HL
12F8 1B14     JR L930E

;Here for no ARDS. This is like the Spectrus does it
12FA 5E      L92FA LD E,(HL)
12FB 23      INC HL
12FC 56      LD D,(HL)
12FD E3      EX (SP),HL
12FE A7      AND A
12FF ED52    SBC HL,DE
1301 19      ADD HL,DE
1302 E3      EX (SP),HL
1303 3009     JR NC,L930E ;if we don't need to update the pointer

;Here if the pointer is affected by the opened space. Update it
1305 05      PUSH DE
1306 EB      EX DE,HL
1307 09      ADD HL,BC
1308 EB      EX DE,HL
1309 72      LD (HL),D
130A 2B      DEC HL
130B 73      LD (HL),E
130C 23      INC HL
130D 01      POP DE

130E 23      L930E INC HL ;Point to the next system variable
130F 2B      DEC A
1310 20B3     JR NZ,L92E5 ;if we haven't scanned them all, yet

1312 EB      EX DE,HL
1313 01      POP DE
1314 F1      POP AF
1315 A7      AND A
1316 ED52    SBC HL,DE
1318 44      LD B,H
1319 4D      LD C,L
131A 03      INC BC
131B 19      ADD HL,DE

131C EB      EX DE,HL
131D C9      RET

;This spot is simply set to have #0000. Used in following code
; Identical to Spectrus at 168F
131E 0000     DEFW #0000 ;A fake "Basic line" numbered 0

;Sets the line number. Includes a dummy entry point to
; return a line number 0.
; Identical to Spectrus at 1961
1320 EB      L9320 EI DE,HL
1321 11E13    LD DE,#131E

;This is the normal entry point. DE points to line number
1324 7E      LD A,(HL)
1325 E6C0     AND #C0
1327 20F7     JR NZ,L9320

1329 56      LD D,(HL)
132A 23      INC HL
132B 5E      LD E,(HL)
132C C9      RET

;Opens space below the calculator stack (& above the workspace)
; Identical to Spectrus at 169E
132D 2A635C  LD HL,(STKBOT) ;Bottom of calculator stack
1330 2B      DEC HL ;HL points to top of workspace
1331 CDBB12   CALL #12BB ;Open up BC spaces
1334 23      INC HL
1335 23      INC HL
1336 C1      POP BC
1337 ED43615C LD (WORKSP),BC
1338 C1      POP BC
133C EB      EI DE,HL
133D 23      INC HL
133E C9      RET

;Reclaim the various work areas, to their minimum lengths
; Identical to Spectrus at 16D0
133F 2A595C  LD HL,(E_LINE) ;E_LINE. Point to edit buffer
1342 360D     LD (HL),#0D ;ENTER character. The minimum edit in
1344 225B5C  LD (K_CUR),HL
1347 23      INC HL
1348 3680     LD (HL),#80
134A 23      INC HL
134B 22615C  LD (WORKSP),HL
134E 2A615C  LD HL,(WORKSP)
1351 22635C  LD (STKBOT),HL
1354 2A635C  LD HL,(STKBOT)
1357 22655C  LD (STKEND),HL
135A E5      PUSH HL
135B 21925C  LD HL,MENBOT
135E 226B5C  LD (MEN),HL
1361 E1      POP HL
1362 C9      RET

;Reclaim the Edit workspace
; Identical to Spectrus at 16D4
1363 ED5B595C LD DE,(E_LINE)
1367 C34D17   JP #174D ;To reclaim the space

;Table look up routine. Used all over to scan the odd ROM table
; Identical to Spectrus at 16D8
136A 23      ;This is a loop point -- NOT the entry point
L936A INC HL ;Point to next entry, first byte

;Enter here, instead
136B 7E      LD A,(HL) ;Get next entry (first byte)
136C A7      AND A
136D C8      RET Z ;00 marks end of table
136E 09      CP C
136F 23      INC HL ;Point to second byte
1370 20F8     JR NZ,L936A ;if C does not match the table entry

;Here if they match. HL points to second byte
1372 37      SCF
1373 C9      RET

```

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October 4, 1987

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